MONO COUNTY
DEPARTMENT OF PUBLIC WORKS

# TECHNICAL SPECIFICATIONS

## *FINAL CLOSURE CONSTRUCTION AT THE BENTON AND CHALFANT LANDFILLS*

## *Mono County, California*

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# 1.0 DESCRIPTION OF THE WORK

The Closure Construction at the Benton and Chalfant Landfills Project consists of the following tasks:

1. Clearing and grubbing where required within the work areas;
2. Minor surface grading to ensure positive drainage over all filled areas;
3. Scarification, moisture conditioning, and recompaction of the upper 12 inches of the existing interim landfill cover;
4. Excavation, screening, placement, moisture conditioning and compaction of an additional 24 inches of approved borrow soil over the compacted interim surface;
5. Access road construction over completed final cover and native soil areas;
6. Drainage channel and detention basin excavation and grading to lines and grades shown on the drawings;
7. Placement of drainage channel geotextile and riprap lining where specified on the drawings;
8. Light scarification and reseeding of final cover layer; and
9. Placement of 1 to 3 inches of wood chips over final reseeded cover.

# 2.0 EXISTING FACILITIES

Existing facilities within the Work area include, but are not limited to, the following:

- Transfer station and associated operations area;
- Barbed-wire fencing and ranch-style gates; and
- Access roads in and around the landfill boundary.

# 3.0 TECHNICAL SPECIFICATIONS

The following Technical Specifications establish the minimum standards of work acceptable for the materials and tasks described. The Construction Quality Assurance team shall utilize the Construction Quality Assurance Plan and these Technical Specifications to ensure Contractor compliance with the minimum standards set forth herein. Acceptance of the work indicates the Contractor agrees to meet the minimum Specifications presented herein.

## 3.1 Temporary Excavations

Excavations in surficial soils for drainage channels and detention basins can likely be made with conventional earth-moving equipment. Should any excavation exceed 4 feet below ground

surface (bgs), OSHA regulations may require shoring or other stabilization. Appropriate regulations should be reviewed and considered during planning.

## 3.2 Allowable Slopes

Cut and fill slopes shall be constructed and/or excavated as shown on the drawings. Any permanent open slopes required for the project shall not exceed 3H:1V (horizontal to vertical). Temporary cut slopes in native granular materials may be as steep as 1.5H:1V, but slopes steeper than 2H:1V should be inspected by a qualified engineer to verify adequate stability.

## 3.3 Erosion Control

Disturbed areas, including faces of cut and fill slopes, shall be prepared and maintained to minimize potential erosion. During construction, temporary erosion control measures such as berms, fiber rolls, erosion control blankets, or other methods approved by the Engineer shall be installed as necessary to prevent discharge of earthen materials from Project sites during periods of precipitation or runoff. Similar measures shall be installed on or around any soil stockpile remaining on-site for an extended period.

## 3.4 Site Drainage and Moisture Protection

Positive site drainage shall be provided during construction and maintained thereafter. Free drainage shall be afforded for storm water run-off from the construction area. Drainage routing shall consider downstream structures and land uses and shall be protective thereof. In no case shall ponding of water be allowed over the waste footprint.

## 3.5 Construction Considerations and Quality Assurance

All excavations shall be inspected by a qualified geotechnical engineer to verify the competency of bearing soils and adequacy of subgrade or surface preparation. All proposed borrow and fill materials shall be tested to determine their suitability for use. Quality assurance observations and testing shall be provided by the County and shall be performed during all phases of construction. It is the Contractor's responsibility to ensure that the Engineer is aware of the construction schedule and that all elements of the design are inspected prior to covering.

## 3.6 Site Grading and Preparation

Upon completion of regrading activities to remove any potential for ponding over the waste footprint, the upper 12 inches of exposed interim cover shall be scarified, moisture-conditioned and compacted to at least 90 percent of maximum dry density at ±2 percent of optimum moisture content as determined by ASTM D1557.

## 3.7 General Soil Fill

General soil fill will be used for final cover construction over the regraded landfill and prepared compacted interim cover layer. Material used in cover construction shall be entirely derived from on-site or other approved borrow sources. At the Benton Landfill, general soil fill for use in final cover construction shall be derived primarily from the County borrow pit on Reichart Ranch Road, located off State Route 120E and approximately 1.7 miles west of the landfill. At the Chalfant Landfill, general soil fill for use in final cover construction shall be derived from the on-site borrow area delineated on the design drawings. Soil from both sources identified herein may require screening to meet the gradation criteria specified in Section 7.2 of the Construction Quality Assurance Plan prepared for the Project. The suitability of all fill materials intended for use shall be subject to approval by the Engineer. General soil fill shall be free of brush, roots, sod, or other deleterious or unsuitable materials. The Contractor shall provide all necessary labor and equipment to remove such materials from borrow and fill areas.

Prior to fill placement, the upper 12 inches of the interim cover layer shall be scarified, moisture conditioned, and recompacted to at least 90 percent of maximum dry density at ±2 percent of optimum moisture content as determined by ASTM D1557. All general fill material shall be moisture-conditioned, placed in loose lifts not exceeding 8 inches in thickness, and compacted to at least 90 percent of maximum dry density at ±2 percent of optimum moisture content as determined by ASTM D1557.

## 3.8 Class 2 Aggregate Base

The wood waste processing and stockpiling area at the Chalfant Landfill shall be constructed over the final cover layer and shall consist of a minimum of 12 inches of Class 2 aggregate base per Section 26-1.02A of Caltrans 2006 Standard Specifications, compacted to a minimum of 90 percent of maximum dry density at ±2 percent of optimum moisture content as determined by ASTM D1557. All other site access roads shall be finished with a minimum of 4 inches of Class 2 aggregate base compacted as specified above.

## 3.9 Geotextile

Geotextile will be minimum 12 ounces per square yard, non-woven, needle-punched geotextile installed in accordance with manufacturer's specifications. Quality assurance personnel will ensure that geotextile is properly pinned, overlapped and oriented in the correct direction relative to the flow direction and in accordance with manufacturer's recommendations.

## 3.10 Riprap

Riprap shall be placed as shown on the drawings, generally as channel protection near intersections with natural drainage channels and where the potential for channel erosion is considered significant. Riprap shall be placed in all channels crossing the final cover at the project sites. Riprap shall be placed to the specified thickness shown on the Drawings. All riprap lining shall be underlain by geotextile. Riprap shall be durable rock meeting the size gradation specifications in Tables 3.1 and 3.2 and be resistant to degradation by weathering and abrasion. Riprap shall be obtained from an approved borrow source.

Channel base and sideslopes shall be compacted to a non-yielding surface subject to Engineer's approval prior to geotextile and riprap placement. Do not place riprap on soft or yielding surfaces unless approved by the Engineer.

V-ditches constructed on the final cover with slopes generally less than 4 percent shall be lined with a minimum of 6 inches of riprap meeting the specifications in Table 3.1. Steeper channel segments in v-ditches constructed over the final cover and in specific areas identified in the upgradient diversion channels shall meet the specifications in Table 3.2.

**Table 3.1. Riprap $D_{50}$ = 3 inches**

| Riprap Lining Thickness | Rock Size (inches) | Percent Finer |
|---|---|---|
| 4½ - 6 inches | 5 | 100 |
| | 4 | 85 |
| | 3 | 50 |
| | 1.5 | 15 |

**Table 3.2. Riprap $D_{50}$ = 6 inches**

| Riprap Lining Thickness | Rock Size (inches) | Percent Finer |
|---|---|---|
| 9 inches | 10 | 100 |
| | 8 | 85 |
| | 6 | 50 |
| | 3 | 15 |

## 3.11 Revegetation

Prior to placement of the wood chip layer, all final cover surfaces shall be lightly scarified and the following seed mix shall be dry-applied at a rate of 20 pounds of pure live seed per acre:

| Shrubs | | Grasses & Wildflowers | |
|---|---|---|---|
| Basin Big Sagebrush | (*Artemisia tridentate)* | Indian Rice Grass | (*Achnatherum hymenoides*) |
| Rubber Rabbitbrush | (*Chrysothamnus nauseosus*) | Silver Lupine | (*Lupinus argenteus*) |
| Horsebush | (*Tetradymia glabrata*) | Desert Needlegrass | (*Achnatherum speciosum*) |
| Saltbrush, Shadscale | (*Atriplex confertifolia*) | Squirreltail | (*Elymus elymoides*) |
| Indigo Bush | (*Psorothamnus arborescens minutifolius*) | Buckwheat | (*Eriogonum fasciculatum*) |

The proportion of grass and wildflower seed to shrub seed shall be applied at an approximate ratio of 2:1, with the proportion of individual species as recommended by seed supplier. The seed supplier may recommend different species or application rates to the County for consideration. Seed shall be delivered to the Project sites in unopened glassine lined bags with the custody seal tag attached for inspection by the Engineer.

Where available, seeds shall be collected directly from sources in Mono County and shall be obtained from areas restricted to no more than 500 feet higher or lower in elevation than the Project sites. If Mono County seed sources are not available, seeds shall be collected directly from sources along the Eastern Sierra. Commercial vendors who collect seed from Mono County sources include Comstock Seed, located at 917 Highway 88, Gardnerville, Nevada 89431, who may be reached by telephone at (775) 746-3681.

## 3.12 Wood Chips

Wood chips shall be placed in a thin layer approximately 1 to 3 inches thick over the final reseeded final cover layer. Wood chips shall be obtained from County stockpiles and shall be derived entirely from chipped, untreated and unpainted wood waste. The County currently maintains a stockpile of wood chips estimated at 85 cubic yards at the Benton Landfill and a stockpile estimated at 685 cubic yards at the Chalfant Landfill. The remaining wood chip requirement will be obtained from the Benton Crossing Landfill, located approximately 33 miles southwest of the Benton Landfill and approximately 51 miles northwest of the Chalfant Landfill. A vicinity map of the Benton Crossing Landfill, which is located in the Long Valley north of Crowley Lake, is attached at the end of the Special Provisions. The Contractor will be responsible for loading and hauling the wood chips.

# 4.0 BORROW AREAS

At the Benton Landfill, general soil fill for use in final cover construction shall be derived primarily from the County borrow pit on Reichart Ranch Road, located off State Route 120E and

approximately 1.7 miles west of the landfill. At the Chalfant Landfill, general soil fill for use in final cover construction shall be derived from the on-site borrow area delineated on the design drawings. If stockpiling of salvaged soil or borrow material is performed, materials shall be stockpiled at locations designated by the County or Engineer. Any unused stockpiled material shall be returned to borrow area and integrated into final slope requirements. After use, borrow areas shall be final graded to prevent freestanding surface water with maximum cut and fill slopes at 3H:1V. Borrow areas shall be left in a clean and neat condition.